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THE NATIONAL TURKEY IMPROVEMENT PLAN

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COOPERATING IN
The NATIONAL TURKEY IMPROVEMENT PLAN
ADMINISTERED BY OFFICIAL STATE AGENCIES AND U.S. DEPARTMENT OF AGRICULTURE

Emblem authorized for use by official State agencies and industry members to signify cooperation in the National Turkey Improvement Plan.

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Miscellaneous Publication No. 555
U. S. DEPARTMENT OF AGRICULTURE

IN 1937 a tentative turkey-improvement plan was developed by a National Turkey Improvement Committee. That plan was intended as a guide for State turkey-improvement work until such time as there was sufficient demand to justify the formulation of a National Turkey Improvement Plan.

In 1941 the National Turkey Federation appointed a special committee to study State programs and to develop a turkey-improvement plan that could be applied throughout the country. The plan developed by the committee was presented at the 1943 annual meeting of the Federation and unanimously adopted by the general session.

The National Turkey Improvement Plan became operative September 25, 1943, with the approval of the Secretary of Agriculture and under authority of an appropriation made by Congress for the Bureau of Animal Industry, United States Department of Agriculture, to be used in cooperation with State authorities in the administration of regulations for the improvement of poultry, poultry products, and hatcheries. Authority for the administration of the plan is now contained in the Department of Agriculture Organic Act of 1944. (Public 425, 78th Congress, H. R. 4278)

Acceptance of the turkey plan is optional with States and individual members of the industry within States. It is administered in each State by an official State agency cooperating with the Bureau of Animal Industry, United States Department of Agriculture.

The plan will require revision from time to time to conform with the development of the industry and with new information as it becomes available. Revisions will be considered at meetings of authorized representatives of the turkey breeders and hatcheries with representatives of the Bureau of Animal Industry.

The primary objectives of the National Turkey Improvement Plan are to improve the production and market quality of turkeys and to reduce losses from disease. Through it turkey breeding stock, hatching eggs, and poults may be identified, authoritatively, with respect to breeding quality and degree of freedom from pullorum disease. The application of the provisions of the plan should cause turkey production to be more efficient and thus aid in making the enterprise more profitable.

Washington, D. C.

Issued November 1944
Revised November 1945

THE NATIONAL TURKEY IMPROVEMENT PLAN[1]

Prepared by the Bureau of Animal Industry, in cooperation with representatives of the official State agencies, the National Turkey Federation, and turkey breeders and hatcheries.

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ARTICLE 1. GENERAL REGULATIONS

REGULATION 1.—For the purposes of this plan the following words, phrases, names, and terms shall be construed, respectively, to mean—

Paragraph 1. **Turkey plan.**—The National Turkey Improvement Plan.

Par. 2. **Chicken plan.**—The National Poultry Improvement Plan.

Par. 3. **Official State agency.**—The agency recognized by the Bureau of Animal Industry, United States Department of Agriculture, to cooperate in the administration of the turkey plan within the State. It may be the State department of agriculture, State college of agriculture, State poultry improvement board or association, or other agency recognized officially by the State government. The official State agency for the chicken plan when modified to include representatives of the turkey industry may logically be recognized as the official State agency for the turkey plan.

Par. 4. **State inspector.**—An employee of the official State agency or other agency recognized officially by the State government whose major duties in connection with the turkey plan comprise the official inspection of flocks, eggs, poults, hatcheries, turkey premises, records, and methods employed in carrying on the work of the turkey plan.

Par. 5. **R. O. P. supervisor.**—An employee of the official State agency or other agency recognized officially by the State government whose major duties in connection with the turkey plan are to represent the official State agency in its supervision of U. S. R. O. P. (U. S. Record of Performance) and U. S. R. O. M. (U. S. Register of Merit) work and to vouch for the accuracy of all U. S. R. O. P. and U. S. R. O. M. records made by authorized U. S. R. O. P. and U. S. R. O. M. breeders under his jurisdiction.

[1]The turkey improvement plan was originally described in a mimeographed statement issued in October 1943. It was revised in 1944 by official delegates and representatives of the Bureau of Animal Industry at the annual meeting of the National Turkey Federation. Further revisions were made in 1945 by the Emergency Executive Committee with representatives of the National Turkey Federation and the Bureau of Animal Industry.

Par. 6. **R. O. P. inspector.**—An employee of the official State agency or other agency recognized officially by the State government whose major duties in connection with the turkey plan are the inspection of flocks and records of U. S. R. O. P. and U. S. R. O. M. breeders.

Par. 7. **Flock-selecting agent.**—A person who has taken a course of training in and passed an examination on (1) the selection of turkey breeding stock according to standardbred and meat-production qualities prescribed by the State college of agriculture or other properly constituted State agency and (2) the turkey plan provisions as applied in the State, and who has been authorized by the official State agency to do flock-selecting work as provided for in the breeding stages of the turkey plan. During the war emergency, and to take care of individual cases only, the official State agency may, at its discretion, authorize flock-selecting agents who have not taken the specified course of training. Only those persons who have demonstrated to the official State agency through work in the field that they are capable of doing satisfactory selecting work, may be so authorized.

Par. 8. **Blood collector.**—A person who has been trained in the proper method of collecting blood samples for the pullorum disease test, who has passed an examination on the turkey plan provisions as applied in the State, and who has been authorized by the official State agency to do the blood-sampling work.

Par. 9. **Eggs and hatching eggs.**—Turkey eggs and turkey hatching eggs.

Par. 10. **Baby poults.**—Poults that have not been fed or watered.

Par. 11. **Started poults.**—Poults that have been fed or watered.

Par. 12. **Breeding stock.**—Turkeys that are to be used for breeding purposes.

Par. 13. **Flock owner.**—A person, firm, or corporation maintaining a breeding flock of turkeys.

Par. 14. **Hatchery.**—Hatching equipment operated or controlled by any person, firm, or corporation producing poults or poults and chicks.

Par. 15. **Turkey hatchery.**—Hatching equipment operated or controlled by any person, firm, or corporation producing poults only (no chicks).

Par. 16. **U. S. R. O. P.**—U. S. Record of Performance.

Par. 17. **U. S. R. O. M.**—U. S. Register of Merit.

Par. 18. **Official label.**—A label, secured through or approved by the official State agency, on which are indicated the product, the breeding stage, and the pullorum class.

Par. 19. **Standard varieties.**—Varieties of turkeys recognized by the American Poultry Association.

Par. 20. **Small varieties.**—Varieties of turkeys with weights below those recognized by the American Poultry Association for standard varieties and developed primarily to provide for small-family trade.

Par. 21. **Broad Breasted Bronze.**—A variety of turkey developed especially for large size and extremely wide breast. In order to qualify as a Broad Breasted Bronze in the turkey plan, the width of the breast at a point 1¾ inches above the keel shall be at least 3½ inches at the time of selection and inspection, for both toms and hens.

REGULATION 2.—The official State agency shall direct, supervise, and be responsible for flock selection, testing for pullorum disease, and all other administrative work as provided in the turkey plan.

REGULATION 3.—All inspectors shall be authorized by the official State agency.

REGULATION 4.—Turkey-breeding houses and pens shall be kept clean and in good condition. The land in the immediate vicinity of the turkey-breeding houses and pens shall be kept in sanitary condition.

REGULATION 5.—Hatcheries and all incubator equipment shall be kept in strictly sanitary condition. All incubators must be thoroughly cleaned and disinfected by spraying or fumigating after each hatch, by means of an officially recognized method.

REGULATION 6.—All eggs used in any breeding stage of this plan shall be reasonably uniform in size and shape, sound in shell, and shall weigh at least 2½ ounces each. Nonpedigreed hatching eggs shall be trayed and the poults boxed with a view to uniformity of size.

REGULATION 7.—The management of a hatchery participating in the turkey plan shall maintain the identity of hatching eggs being incubated, including those being custom-hatched, and shall keep accurate records concerning the name and address of each flock owner; the number of eggs received from each flock owner; the name and address of each purchaser; the number, hatchery grade, if any, variety, and date of shipment of all poults. These records shall be open for official inspection at all times. Eggs received and poults hatched shall be subject to inspection at all times.

REGULATION 8.—All poults sold or offered for sale under the turkey plan terminology shall be normal and representative of the variety.

REGULATION 9.—Delivery of poults shall be made in approved types of poult boxes properly ventilated and securely tied, and poults shall be shipped to reach the ultimate purchaser within the time limit prescribed by the United States Postal Regulations.

REGULATION 10.—Any person, firm, or corporation selling hatching eggs of a U. S. breeding stage or pullorum class shall sell hatching eggs from participating flocks only. Adequate records shall be kept and shall at all times be available to the official State agencies concerned. These records shall consist of names and addresses of all flock owners supplying hatching eggs, the number of hens in each breeding flock, and the number of hatching eggs of each variety sold to each purchaser.

REGULATION 11.—With the approval of the official State agency, crossbred hatching eggs and poults may be produced and sold by participants in the turkey plan, provided the parent stock is selected and banded, and the flock is inspected as required in the U. S. Approved breeding stage. These flocks shall be designated as U. S. Approved Crossmated flocks. Hatching eggs or poults from such flocks shall be designated as U. S. Approved Crossbred hatching eggs or poults, with a descriptive phrase designating the variety of the toms and the variety of the hens used in the cross. (The variety of the tom shall be designated first in all crosses.)

REGULATION 12.—When more than one hatchery located within a State is operated under the same name, ownership, or management,

one or more of these hatcheries may not participate in the turkey plan unless all of them participate. In the event that any person, firm, or corporation has nonparticipating hatcheries in other States no poults or turkey hatching eggs shall be shipped to the participating hatcheries from the nonparticipating hatcheries.

Regulation 13.—Breeding stock and each bundle or package of hatching eggs and poults sold or offered for sale by participants shall be designated by official labels or tags defining the breeding stage and pullorum class in accord with the regulations of the plan, except that poults that are seconds, culls, rejects, or abnormal for variety characteristics shall not be sold or offered for sale under official labels. (See Regulations 8 and 23.)

Regulation 14.—All advertising must be in accord with the rules and regulations of the turkey plan and the Trade Practice Rules of the Federal Trade Commission for the baby chick industry. Copies of proposed folders, catalogs, circulars, or other literature shall be submitted to and approved by the official State agency before being published. Copies of such literature, after being published, shall be filed with the official State agency. Copies of all publication advertising shall be mailed to the official State agency at or before the time these advertisements are submitted to the publisher or publishers. The advertising of hatcheries which have places of business in more than one State shall be approved by the official State agency of the State in which the home office of the hatchery is located. Such advertising shall be checked by the Bureau of Animal Industry, United States Department of Agriculture, before being approved. Since U. S. R. O. P. and U. S. R. O. M. are generally understood to apply to chickens, a participant in the turkey plan who uses these terms shall prefix them with the word "turkey" in letters of the same size of type. (Refer also to regulation 17 for proper use of terms.)

Regulation 15.—The various designs illustrative of the breeding stages and pullorum classes may be used only by participants who have met the specified requirements.

Regulation 16.—Any person, firm, or corporation desiring to participate in the turkey plan shall sign an agreement with the official State agency and shall not purchase, receive, offer for sale, or be a dealer in or agent for breeding stock, hatching eggs, or poults other than those produced under the turkey plan, except with permission from the official State agency. In certain cases special permission may be granted by the official State agency, in writing, to purchase hatching eggs, poults, or breeding stock not produced under the turkey plan for use in breeding or hatching-egg supply flocks. In such cases a report shall be made to the official State agency on each shipment received and to whom delivered.

Regulation 17.—Flocks, hatching eggs, hatcheries, and poults that have met the requirements of both a breeding stage and pullorum class of the turkey plan shall be designated as follows: U. S. Approved, Pullorum-Tested; U. S. Approved, Pullorum-Controlled; U. S. Approved, Pullorum-Passed; U. S. Approved, Pullorum-Clean; U. S. Certified, Pullorum-Tested; U. S. Certified, Pullorum-Controlled; U. S. Certified, Pullorum-Passed; and U. S. Certified, Pullorum-Clean.

Matings, hatching eggs, and poults that have met the requirements of one of the higher breeding stages and a pullorum class of the turkey plan shall be designated as follows: U. S. R. O. P., Pullorum-Tested; U. S. R. O. P., Pullorum-Controlled; U. S. R. O. P., Pullorum-Passed; U. S. R. O. P., Pullorum-Clean; U. S. R. O. M., Pullorum-Tested; U. S. R. O. M., Pullorum-Controlled; U. S. R. O. M., Pullorum-Passed; and U. S. R. O. M., Pullorum-Clean.

Where descriptive terms are used in advertising, in addition to the official terminology of the turkey plan, such terms must be clearly explained.

Regulation 18.—Started poults must be labeled as such, and all the poults in each lot sold or offered for sale shall be of the same age (hatching date) unless otherwise specified.

Regulation 19.—With the approval of the official State agency, hatching-egg and poult dealers may participate in the turkey plan and enjoy all the privileges of participating hatcheries in the handling and selling of hatching eggs and poults, provided all the applicable requirements for participating hatcheries are fully and completely complied with. Chicken hatching eggs and chicks may be handled by participating dealers provided: (1) Such chicken hatching eggs and chicks are of the same or a higher official pullorum classification than that attained by the dealer for turkey hatching eggs and poults, and (2) they are advertised and sold as of the same pullorum classification as are the turkey hatching eggs and poults.

Regulation 20.—Evidence of noncompliance with the provisions of the turkey plan that is established after thorough investigation and hearing to the satisfaction of the official State agency, and not corrected within a reasonable time, shall bar any participant from further participation for a period of two years.

Regulation 21.—Participation in one of the pullorum classes shall be a prerequisite to participation in any of the breeding stages of the plan.

Regulation 22.—Participation in any phase of the turkey plan shall be construed as maintaining supervision and compliance throughout the 12 months of the year. (It is understood that a participant may withdraw from participation or that his agreement may be terminated by the official State agency for cause.)

Regulation 23.—Poults and hatching eggs produced under the rules and regulations of the turkey plan shall lose their identity as of the terminology used in the plan when they are purchased for resale by any person, firm, or corporation not participating in the plan.

Regulation 24.—With the approval of the official State agency, a hatchery producing or selling both poults and chicks may participate in the turkey plan and not participate in the chicken plan, provided the chicken eggs are hatched and the chicks brooded in a separate room as described for custom hatching in Article 3, Section 1, Paragraph 8.

Regulation 25.—A producer with a flock of turkeys and a flock of chickens may participate in the turkey plan and not participate in the chicken plan, provided the chickens are completely segregated from the turkeys in a manner satisfactory to the official State agency.

REGULATION 26.—The following body weights by classes for the various varieties should be considered as suggested minimums in all breeding stages:

TABLE 1.—*Body weights by classes for the various varieties of turkeys*

Class	Small varieties	Standard varieties other than Bronze	Standard Bronze	Broad Breasted Bronze
	Minimum body weight	Minimum body weight	Minimum body weight	Minimum body weight
	Pounds	*Pounds*	*Pounds*	*Pounds*
Adult tom	16	29	30	33
Yearling tom	15	25	28	30
Young tom (24 weeks)	10	14	17	21
Adult hen	10	16	18	20
Yearling hen	9	14	16	18
Young hen (24 weeks)	7	10	12	14

REGULATION 27.—The selection of the birds to be used as breeders in a flock to qualify as U. S. Approved or U. S. Certified by a State inspector shall be regarded as one official inspection.

REGULATION 28.—The term "broad-breasted" shall not be used in describing any variety of turkeys unless the width of the breast at a point 1¾ inches above the keel was at least 3½ inches in width for both toms and hens at the time of selection and inspection.

ARTICLE 2. BREEDING STAGES

SECTION 1, U. S. APPROVED BREEDING STAGE

Paragraph 1. **U. S. Approved flocks.**—These flocks shall meet the following requirements: Toms and hens shall be carefully selected once each year for constitutional vigor and standard-bred qualities to a reasonably high degree. The following specifications should be emphasized:

(GREEN)

FIGURE 1.—Design used to identify U. S. Approved flocks, eggs, poults, and hatcheries.

(*a*) Conformation: Body should be deep and relatively rectangular in shape, flesh of breast well developed, giving this region a rounded fullness, in contrast to sharp-keeled birds lacking in muscular development. The front point of the keel should be well fleshed and free from coarseness. The back should be flat and wide over its entire length. Leg bones should be sturdy of medium length, and without coarseness. Normal turkey carriage, or posture (body carried at an angle of 35° to 45° from the horizontal) is important as are sturdy, strong legs placed squarely under the body.

(*b*) Shape of breastbone: Breastbone should be straight, relatively long, and parallel with the back. It should extend well up between the lower thighs (drumsticks) as the bird is suspended by the legs.

(*c*) Rate of maturity: Birds showing definite indications of late maturity should not be approved.

Par. 2. The method of selecting turkey breeding stock for standard-bred and meat-production qualities prescribed by the State college of agriculture or other properly constituted State agency shall serve as a basis for the selection of toms and hens. Recommendations of special committees of the National Turkey Federation and the American Poultry Association on turkey type, weight, and other variety characteristics may properly be used as guides in developing and improving standards of selection. Emphasis at all times should be placed upon uniformity as regards conformation, size, color, carriage, and appearance of the birds remaining in the breeding flock after selection is completed. All birds to be used in U. S. Approved breeding flocks shall be selected by a State inspector or by a flock-selecting agent.

Par. 3. All birds selected for U. S. Approved breeding flocks shall be banded at the time of selection, with sealed and numbered leg or wing bands obtained from the official State agency. Birds rejected by the State inspector or the flock-selecting agent shall have leg and wing bands removed, and shall be kept separate from the breeding flocks. The selection of birds for U. S. Approved flocks shall be completed prior to March 1, and at least 30 days before any eggs are saved for hatching purposes, except that this 30-day interval shall not be required if all the toms found in the breeding flock are approved. No birds shall be selected and approved earlier than at 22 weeks of age.

Par. 4. Before an individual flock which is not affiliated with a participating hatchery may be recognized as a U. S. Approved flock, it shall be inspected and approved by a State inspector. Before saving eggs for hatching or offering for sale U. S. Approved eggs or poults of any one variety, at least 25 percent of the hatchery flocks of this variety supplying eggs to the hatchery must be inspected and approved by the State inspector, and the remainder of the flocks must be inspected during the hatching season. The inspection of a flock by a State inspector shall consist in the physical examination, by handling of a sufficient number of toms and hens to satisfy him that the flock-selection work performed meets the requirements of the U. S. Approved breeding stage.

Par. 5. No birds except those with official sealed and numbered leg or wing bands shall be allowed in the breeding flocks, and no toms shall be allowed with any other hens of breeding age on the same premises except in U. S. R. O. P. or U. S. R. O. M. matings.

Par. 6. Only one variety shall be kept on a farm unless, where more than one variety is kept, ample provision has been made to keep these varieties and their eggs separate.

Par. 7. **U. S. Approved hatching eggs.**—Such eggs shall come from U. S. Approved flocks.

Par. 8. **U. S. Approved poults.**—They shall be hatched from U. S. Approved hatching eggs and in U. S. Approved hatcheries.

Par. 9. **U. S. Approved hatcheries.**—These hatcheries shall be inspected by a State inspector at least once during the hatching season. They may not hatch for sale or sell hatching eggs and poults other than those produced under the breeding stages of the turkey plan. U. S. Approved hatcheries may hatch for sale and sell both U. S. Approved and U. S. Certified poults of the same variety, provided

adequate segregation of eggs and poults is practiced and ample records are kept to satisfy the official State agency that there is no mixing or interchanging from one breeding stage to another.

SECTION 2, U. S. CERTIFIED BREEDING STAGE

Paragraph 1. **U. S. Certified flocks.**—These flocks shall fulfill all the requirements of U. S. Approved flocks and shall be free from disqualifications. The hens shall be mated to U. S. R. O. P. toms or to sons of U. S. R. O. M. matings. The toms shall be selected by a State inspector and the hens by a State inspector or a specially authorized flock-selecting agent. All flocks shall be inspected by a State inspector at least once during the breeding season. After the second year of U. S. Certified breeding work on any farm, hens to be used as breeders shall be from U. S. Certified flocks or from U. S. R. O. P. or U. S. R. O. M. matings.

(YELLOW)

FIGURE 2.—Design used to identify U. S. Certified flocks, eggs, poults, and hatcheries.

Par. 2. **U. S. Certified hatching eggs.**—Such eggs shall come from U. S. Certified flocks.

Par. 3. **U. S. Certified poults.**—They shall be hatched from U. S. Certified eggs in U. S. Certified hatcheries or in U. S. Approved hatcheries. When hatched in U. S. Approved hatcheries adequate segregation of eggs and poults must be provided and ample records must be kept to satisfy the official State agency that there is no mixing or interchanging from one breeding stage to another.

Par. 4. **U. S. Certified hatcheries.**—These hatcheries may hatch for sale or sell U. S. Certified eggs or poults and eggs and poults from U. S. R. O. P. and U. S. R. O. M. matings only. They shall fulfill all the requirements of U. S. Approved hatcheries.

SECTION 3, U. S. RECORD OF PERFORMANCE BREEDING STAGE

Paragraph 1. U. S. Record of Performance embraces records of egg production, egg weight, hatchability, and body weight made on the breeder's premises under official supervision and similar records made at State colleges of agriculture, and State and Federal experiment stations, when such records are passed on by the official State agency and when the individual birds meet other U. S. R. O. P. requirements. The birds produced by State colleges of agriculture and State and Federal experiment stations may be recognized as U. S. R. O. P. only for the use of U. S. R. O. P. breeders in their breeding work. The primary objective of this and the U. S. R. O. M. breeding stage is to produce young toms to head U. S. Certified flocks.

Par. 2. The trap nests used in U. S. R. O. P. work shall be of an approved type and shall be kept in perfect working order at all times. The breeding farm and all egg-production records shall be subject at all times to unannounced inspections by a State inspector. At the time of each inspection, the inspector shall have sole charge of the trap nests and of eggs laid. Each U. S. R. O. P. candidate shall be banded with a sealed and numbered official leg band. No hens other than those entered in U. S. R. O. P. shall be allowed in the pens where

U. S. R. O. P. candidates are being trap-nested, except with the approval of the official State agency.

Par. 3. U. S. R. O. P. eggs and poults may be produced only on a U. S. R. O. P. breeder's premises except that with the approval of the official State agency (*a*) a U. S. R. O. P. breeder may have eggs hatched by any hatchery operating under the turkey plan provided the U. S. R. O. P. breeder does the pedigreeing of the poults; and (*b*) a U. S. Approved or U. S. Certified hatchery owner may produce U. S. R. O. P. poults from purchased U. S. R. O. P. eggs for the use of his hatchery-flock owners only, provided proper records of purchases are sent to the official State agency and a State inspector does the wing-banding of these poults.

Par. 4. When U. S. R. O. P. hatching eggs are transferred from one U. S. R. O. P. breeder to another U. S. R. O. P. breeder or hatcheryman for the purpose of hatching U. S. R. O. P. poults, the conditions that shall govern such a transaction include the following: (*a*) The U. S. R. O. P. breeder who sells the U. S. R. O. P. hatching eggs must send a report in triplicate at the time the eggs are shipped consisting of a list of the eggs sold, the pen or sire number and dam number of each egg, and the egg production, average egg weight, hatchability, and body weight of each dam, to his R. O. P. supervisor. If the eggs are shipped outside the State, these records shall be attested to by the R. O. P. supervisor, who shall retain one copy and mail one copy to the purchaser and one to the official State agency of the State to which the eggs are shipped. (*b*) Within 5 days after incubation has begun, the purchasing U. S. R. O. P. breeder or hatcheryman must submit to his official State agency a list of the U. S. R. O. P. eggs bought. (*c*) Within 5 days after hatching time the U. S. R. O. P. breeder or hatcheryman who purchased the eggs must send to his official State agency a list of the poults hatched from each dam and their respective wing-band numbers.

(BLUE)

FIGURE 3.—Design to identify U. S. R. O. P. hatching eggs, poults, and breeding stock.

Par. 5. When U. S. R. O. P. poults, young toms, or mature birds are sold or transferred by members of the industry participating in the turkey plan, the individual making the sale must send a report in triplicate to his R. O. P. supervisor at the time these products are shipped giving the number of birds sold; the leg- or wing-band number, egg production, average egg weight, hatchability, and body weight of each dam, and the pen or leg-band number of the sire of each poult, young tom, or mature bird. If the poults, young toms, or mature birds are shipped outside the State, these records shall be attested to by the R. O. P. supervisor, who shall retain one copy and mail one copy to the purchaser and one to the official State agency of the State to which these products are shipped.

Par. 6. To be eligible for U. S. R. O. P. entry, all hens shall have been raised from U. S. R. O. M. matings, U. S. R. O. P. matings, or U. S. Certified flocks or other flocks of breeding satisfactory to the official State agency and the individual birds must meet the body type requirements prescribed by the official State agency. Eligibility shall

be confined to any standard variety or other variety recognized by the official State agency.

Par. 7. All hens trap-nested on the premises of a U. S. R. O. P. breeder shall be considered as entered under U. S. R. O. P. supervision with the following exceptions: (*a*) All qualified U. S. R. O. P. hens may be trap-nested. (*b*) He may, with the approval of the official State agency, trap-nest any other variety which he is developing as a basis for future U. S. R. O. P. work. (*c*) With the approval of the official State agency, hens in their second or subsequent production years may be privately trapped to complete records that were begun before U. S. R. O. P. work was undertaken.

Par. 8. All matings shall be inspected at least two times each year. One or more consecutive days of inspection by the R. O. P. inspector shall represent a single inspection. In the event of an outbreak of contagious disease on a turkey farm where U. S. R. O. P. work is carried on, inspection may be temporarily suspended.

Par. 9. **Duties of R. O. P. supervisor.**—The R. O. P. supervisor shall represent the official State agency in its supervision of U. S. R. O. P. work, and he shall vouch for the accuracy of all U. S. R. O. P. records made by authorized U. S. R. O. P. breeders under his jurisdiction. He shall keep on file in his office at least five years, (*a*) a record of all qualified toms, with at least one-generation pedigree showing U. S. R. O. P. records of the female ancestors, and (*b*) a record of all qualified hens with their U. S. R. O. P. records. He shall also keep on file a record of all U. S. R. O. P. matings and all U. S. R. O. P. poults with at least one-generation pedigree.

Par. 10. The R. O. P. supervisor, in publishing a summary of the U. S. R. O. P. work under his supervision each year, shall include the following information for each flock:

(*a*) Total number of young hens of that particular variety on the farm.

(*b*) Number of young hens entered in U. S. R. O. P.

(*c*) Number of young hens meeting the U. S. R. O. P. requirements.

(*d*) Percentage of hens entered meeting the U. S. R. O. P. requirements.

(*e*) Average egg production of the qualifying hens.

(*f*) Average egg weight of the qualifying hens.

(*g*) Average body weight of the qualifying hens.

(*h*) Average hatchability of the qualifying hens.

Par. 11. The R. O. P. supervisor may bring charges to the official State agency of his State against any U. S. R. O. P. breeder for falsifying records, for unethical conduct in his business methods, or for any other cause which he may consider detrimental to U. S. R. O. P. work. On such charges being proved in a fair hearing the offending breeder must be reprimanded or suspended by the official State agency according to the nature of the offense. (See Regulation 20.)

Par. 12. **Duties of R. O. P. inspector.**—The R. O. P. inspector shall work under direction of the R. O. P. supervisor. It shall be his duty to visit and inspect the work of each U. S. R. O. P. breeder at least three times each year, his visits to be unannounced, and two of which shall be during the trap-nesting period. On each visit during the trap-nesting period he shall do the trap nesting for the day and shall record all eggs laid and shall weigh and record the weight of the

egg laid by each individual bird entered in U. S. R. O. P. He shall examine hens apparently out of production to see that they are not being credited with eggs. On at least one visit he shall examine all birds in U. S. R. O. P. and U. S. R. O. P. candidate matings to see that the birds which constitute these matings are properly listed with the supervisor. He shall compare the number of eggs being incubated from each hen with the number she is credited with having laid during the corresponding period, and shall have authority to test those eggs for fertility. When the hatch is reported he shall compare his findings with the number of poults reported hatched and wing-banded. He shall be courteous to breeders at all times, but shall be on the alert to discover errors in records or violations of rules, intentional or otherwise. He shall immediately report to the supervisor any suspicious circumstances or appearance of fraud in the records or business dealings of a U. S. R. O. P. breeder.

Par. 13. **U. S. R. O. P. turkey breeder.**—A U. S. R. O. P. turkey breeder is a person, firm, or corporation maintaining turkey matings in accordance with the provisions of the U. S. R. O. P. breeding stage. In addition to the U. S. R. O. P. and U. S. R. O. P. candidate matings, all other mated hens supplying hatching eggs, to such turkey breeder or to any hatchery owned or operated by him shall qualify for one of the breeding stages of the turkey plan.

Par. 14. Each turkey mating of a U. S. R. O. P. breeder must be trap-nested at regular intervals every day for at least 13 consecutive weeks (91 days) beginning with the day of laying the first egg in a trap nest. He shall send to his supervisor, not later than the tenth day of each month, a complete report of all U. S. R. O. P. egg-production records and egg weights for the previous month. The egg-production, pedigree, and sales records shall at all times be open to examination by the supervisor or inspector.

Par. 15. **U. S. R. O. P. females.**—Young hens shall have laid 46 or more eggs during a period of 13 consecutive weeks beginning with the day of laying the first egg in a trap nest.

Par. 16. In order to qualify for U. S. R. O. P., the eggs of each hen must have an average weight of at least 30 ounces to the dozen. All the normal eggs laid during two consecutive weeks (14 days) of the eight weeks referred to in paragraph 17 of this section and a minimum of 10 eggs shall be weighed in arriving at the average egg weight.

Par. 17. In order to qualify for U. S. R. O. P., the eggs produced by each hen during a minimum period of 8 consecutive weeks and at least 28 eggs shall be set and must hatch at the rate of 70 percent or more of all eggs set. At altitudes of 3,000 to 3,499 feet, the minimum qualifying hatchability percentage shall be 65 and at altitudes of 3,500 feet or more the minimum qualifying hatchability percentage shall be 60.

Par. 18. All hens shall be of at least qualifying body weight for yearling hens (due allowance being given to the 6-pound tolerance), as set forth in the American Standard of Perfection, and be reasonably good representatives of the variety. For varieties not included in the American Standard of Perfection the type and qualifying weight shall be designated by the official State agency. The official body weight shall be taken at the time the hen lays her first egg in a trap nest.

Par. 19. The U. S. R. O. P. breeder and the R. O. P. inspector shall record the leg-band numbers of all U. S. R. O. P. candidates showing a disqualification or laying eggs of undesirable shape or shell texture. Such hens shall not qualify as U. S. R. O. P. hens. The R. O. P. inspector may remove the U. S. R. O. P. leg band from any hen which develops these disqualifications or defects subsequent to qualification.

Par. 20. All hens meeting the above requirements shall be considered as U. S. R. O. P. hens. Before such hens may be sold as U. S. R. O. P. hens or used in U. S. R. O. P. matings they shall be examined and banded with a U. S. R. O. P. sealed, official leg band.

Par. 21. **U. S. R. O. P. candidate matings.**—Hens entered in U. S. R. O. P. may be mated to a U. S. R. O. P. tom, in a single-tom mating, for the purpose of obtaining progeny records during the first breeding year. The breeder shall send the R. O. P. supervisor a complete report on the birds in each such mating, the number of eggs incubated, and the wing-band numbers of the poults hatched and banded. Sealed and numbered official wing bands marked "U. S. R. O. P. Cand." shall be used to differentiate such poults from U. S. R. O. P. poults. The young tom progeny of the hens which qualify as U. S. R. O. P. hens may qualify as U. S. R. O. P. toms as set forth in Paragraph 22 of this section provided they meet all the requirements of U. S. R. O. P. toms except that of being produced from U. S. R. O. P. poults.

Par. 22. **U. S. R. O. P. toms.**—Toms produced from U. S. R. O. P. poults shall qualify as U. S. R. O. P. toms provided they shall have passed the final individual inspection of a State inspector not earlier than at 22 weeks of age. Young toms from U. S. R. O. P. candidate matings are eligible for qualification as U. S. R. O. P. toms after their dams qualify as U. S. R. O. P. hens. Each tom passed by an inspector shall possess strong constitutional vigor and be a good representative of the variety, shall be free from disqualifications, and shall be banded with a U. S. R. O. P., sealed, and numbered official leg band when passed by the inspector. At the time of inspection and banding, the inspector shall make a complete record of the wing- and leg-band numbers and body weight of each tom banded. Privately pedigreed toms referred to in the next paragraph and that have met the progeny-test requirements for U. S. R. O. M. toms shall be considered as having met the requirements for U. S. R. O. M. and U. S. R. O. P. toms and may be officially leg-banded as such.

Par. 23. **U. S. R. O. P. matings.**—These matings shall be comprised of only U. S. R. O. P. hens mated to a U. S. R. O. P. tom. The breeder may place in the U. S. R. O. P. mating, hens that are not U. S. R. O. P., provided he does not sell pedigreed eggs, poults, or stock from such hens as U. S. R. O. P. products. To make it possible for a breeder to get started in U. S. R. O. P. breeding work within his own strain during the first year of such work on his farm, the tom mated with U. S. R. O. P. hens need not be a U. S. R. O. P. tom provided he is of equal pedigree. Such toms may be used in similar matings during the second year of U. S. R. O. P. breeding work, if reinspected and passed by the inspector, but not thereafter unless they qualify as U. S. R. O. M. toms. No eggs or progeny from such a mating shall be sold as U. S. R. O. P. products, except that young toms produced during the first breeding year whose dams qualify for U. S. R. O. P.

may be permitted to head U. S. Certified flocks in the State where produced or to head U. S. R. O. P. matings on the breeder's premises.

Par. 24. Only one tom shall be allowed in a single U. S. R. O. P. mating or U. S. R. O. P.-candidate mating at any one time, and the date of entry and removal of toms shall be properly recorded.

Par. 25. The hens shall be trap-nested throughout the breeding season, and each egg shall be accurately identified as to the U. S. R. O. P. hen and the tom or pen from which it came. For each hen an accurate record shall be kept of all eggs laid during the breeding season, the number of eggs sold, the number of eggs incubated, and the total number of poults banded. On request, eggs that do not hatch shall be held for the inspector.

Par. 26. If the eggs are to be incubated to produce U. S. R. O. P. poults, a report must be made of the number of eggs from each hen, with her pen number, a copy of which must be sent to the supervisor on N. P. I. P. Form 8 or a substitute form within 5 days after the date of hatch.

Par. 27. Birds used in all U. S. R. O. P. matings shall be inspected at least twice during the breeding season.

Par. 28. **U. S. R. O. P. hatching eggs.**—Such eggs shall come only from U. S. R. O. P. matings. Each egg shall bear the U. S. R. O. P. number of the hen that laid it and the pen or tom number of the mating.

Par. 29. **U. S. R. O. P. poults.**—They shall come only from U. S. R. O. P. eggs. The poults from each hen shall be hatched separately in pedigree baskets or sacks and shall be banded individually with sealed and numbered official wing bands at the time of removal from pedigree baskets or sacks. An accurate record of all poults banded shall be furnished the R. O. P. supervisor within 5 days after the date of hatch. The poults shall be subject to inspection at any time. The bands from dead poults shall be retained for the information of the inspector and shall be furnished to him on request.

SECTION 4, U. S. REGISTER OF MERIT BREEDING STAGE

Paragraph 1. This breeding stage embraces individual and family records of egg production, hatchability, viability, and market quality of the progeny made on the breeder's premises under official supervision. All the applicable requirements of section 3, paragraphs 1 to 12, inclusive, are to be interpreted as applying to this section also. Provision is made for the recognition of family breeding and progeny testing with or without trap nesting.

Par. 2. **U. S. R. O. M. turkey breeder.**—A U. S. R. O. M. turkey breeder is a person, firm, or corporation maintaining turkey matings in accordance with the provisions of the U. S. R. O. M. breeding stage. In addition to the U. S. R. O. M. and U. S. R. O. M.-candidate matings, all other mated hens supplying hatching eggs to such turkey breeder or to any hatchery owned or operated by him shall qualify for one of the breeding stages of the turkey plan.

(PURPLE)

FIGURE 4.—Design authorized to identify U. S. R. O. M. males, females, and matings.

Par. 3. Each trap-nest turkey mating of a U. S. R. O. M. breeder must be trap-nested at regular intervals every day for at least 8 consecutive weeks during the breeding season. He shall send to his supervisor, not later than the tenth day of each month, a complete report of all U. S. R. O. M. and U. S. R. O. M. candidate egg-production records for the previous month. Within 5 days after each hatch, a complete record of eggs set, and good poults hatched and banded shall be sent his supervisor. He shall rear on his premises or have reared under his supervision to at least 22 weeks of age, the poults hatched from eggs incubated for the 8 consecutive-week period referred to in paragraph 21 (*a*) and paragraph 22 (*a*) and (*b*), in order that the viability and market quality requirements for U. S. R. O. M. toms and hens may be determined. The egg production, hatchability, pedigree, mortality, and sales records shall at all times be open to examination by the supervisor or inspector.

Par. 4. **U. S. R. O. M. single-tom non-trap-nest candidate matings.**—These matings consist of U. S. Approved hens mated to a son of a U. S. R. O. M. mating. To make it possible for a breeder to get started in U. S. R. O. M. breeding work within his own strain, U. S. Approved toms of outstanding quality may be used to head these matings during the first 2 years of such breeding work on his farm.

Par. 5. Only one tom shall be allowed in a breeding pen at one time and the date of entry and removal of the tom and each hen shall be properly recorded and reported to the official State agency. The tom shall be considered a U. S. R. O. M.-candidate tom until he qualifies for U. S. R. O. M. as designated in paragraph 21 of this section. After this qualification the progeny from the candidate tom shall be considered as coming from a U. S. R. O. M. mating.

Par. 6. For each mating, an accurate daily record shall be kept of all eggs laid during the breeding season; and a weekly record shall be kept of the number of eggs sold, the number of eggs incubated, and the total number of good poults hatched and wing banded. Each egg shall be marked with the letter or number of the pen or the tom.

Par. 7. The poults from each pen shall be kept separate at hatching time and shall be banded individually at the time of removal from the hatching trays with official sealed and numbered wing bands. These wing bands shall be marked "CT" in addition to the band number to indicate that poults so banded are the progeny of a candidate tom. The poults shall be subject to inspection at any time. The bands from dead poults shall be retained for the information of the inspector and shall be delivered upon request.

Par. 8. These matings shall be inspected at least twice during the breeding season by a State inspector.

Par. 9. **U. S. R. O. M. single-ton trap-nest candidate matings.**—These matings consist of U. S. Approved hens mated to a son of a U. S. R. O. M. mating. To make it possible for a breeder to get started in U. S. R. O. M. breeding work within his own strain, U. S. Approved toms of outstanding quality may be used to head these matings during the first 2 years of such breeding work on his farm.

Par. 10. Only one tom shall be allowed in a mating at one time and the date of entry and removal of the tom and each hen shall be properly recorded and reported to the official State agency.

Par. 11. The toms and hens shall be considered U. S. R. O. M. candidates until they qualify as provided in paragraph 21 and 22; respectively, of this section. After this qualification the progeny of either the candidate tom or candidate hen, whichever qualifies, shall be considered as coming from a U. S. R. O. M. mating.

Par. 12. For each mating and for each hen in the mating, an accurate daily trap-nest record shall be kept of all eggs laid during the breeding season and a weekly record of the number of eggs sold, the number of eggs incubated, and the number of good poults hatched and banded. Each egg shall be marked with the letter or number of the pen or tom and the number of hen that laid it.

Par. 13. The poults from each hen shall be hatched separately in pedigree baskets or sacks and shall be banded individually at the time of removal from the pedigree baskets or sacks with official sealed and numbered wing bands. These wing bands shall be marked "CP" in addition to the band number to indicate that the poults so banded are full pedigreed progeny from a U. S. R. O. M. candidate tom and hen. The poults shall be subject to inspection at any time. The bands from dead poults shall be retained for the information of the inspector and shall be delivered upon request.

Par. 14. These matings shall be inspected by a State inspector at least twice during the breeding season.

Par. 15. **U. S. R. O. M. matings.**—These matings may consist of:

(*a*) U. S. R. O. M. tom remated to the same hens with which he qualified; or

(*b*) U. S. R. O. M. hen remated to the same tom with which she qualified; or

(*c*) U. S. R. O. M. tom remated to the same U. S. R. O. M. hens with which he qualified.

Par. 16. These matings shall be inspected by a State inspector at least twice during the breeding season.

Par. 17. **Poults from U. S. R. O. M. matings.**—These poults shall be hatched as provided in section 4, paragraph 7, or paragraph 13, and shall have wing bands lettered as follows:

"U. S. R. O. M.–T" for those produced from matings described in par. 15 (*a*).

"U. S. R. O. M.–H" for those produced from matings described in par. 15 (*b*).

"U. S. R. O. M.–TH" for those produced from matings described in par. 15 (*c*).

Par. 18. **Sons of U. S. R. O. M. matings.**—In order to qualify to head U. S. Certified matings, a son of a U. S. R. O. M. mating shall have passed the final individual inspection of a State inspector not earlier than at 22 weeks of age and shall be banded at the time of inspection with an official sealed and numbered leg band. These leg bands shall be lettered "U. S. Cert.–TS", "U. S. Cert.–H. S.", or "U. S. Cert.–THS", to indicate that the tom so banded is the son of a U.S.R.O.M. tom, a U. S. R. O. M. hen, or both a U. S. R. O. M. tom and a U. S. R. O. M. hen.

Par. 19. At the time of inspection the son of a U. S. R. O. M. mating shall indicate strong vigor, shall show, upon handling, excellent body conformation and fleshing, and shall be an excellent representative of the variety in the judgment of the State inspector. The inspector shall make a complete record of the body weight, wing- and leg-band numbers of each tom banded.

Par. 20. The young toms from U. S. R. O. M.-candidate matings described in paragraphs 4 and 9 of this section are eligible for qualification as sons of U. S. R. O. M. matings after their parent mating qualifies as a U. S. R. O. M. mating.

Par. 21. **U. S. R. O. M. toms.**—Toms, when mated as in section 4, paragraph 4 or 9, shall qualify for U. S. R. O. M. when the following requirements are met:

(*a*) All eggs produced from the mating during a period of 8 consecutive weeks and a minimum average of 20 eggs per hen and 200 eggs per mating shall be set. The average hatchability of all eggs set shall be 65 percent or more. At altitudes of 3,000 to 3,499 feet, the minimum qualifying hatchability percentage shall be 60, and at altitudes of 3,500 feet or more the minimum qualifying hatchability percentage shall be 55.

(*b*) The minimum number of turkeys raised to 22 weeks of age shall be 75 percent of all poults started, and at least 100 turkeys from each pen shall be raised to this age.

(*c*) Each bird shall be carefully examined not earlier than at 22 weeks of age by a State inspector or authorized agent of the official State agency. At the time of this examination, at least 60 percent of all young tom progeny and at least 80 percent of all young hen progeny shall be of U. S. Grade A market quality, except for pinfeather, fattening, and dressing requirements, provided a minimum of 70 turkeys from each mating meet these requirements.

(*d*) Having met these requirements the tom may be banded by a State inspector with an official sealed and numbered leg band lettered "U. S. R. O. M."

Par. 22. **U. S. R. O. M. hen.**—She shall, on initial inspection, indicate strong vigor, excellent body conformation and fleshing condition, and shall be an excellent representative of the variety in the judgment of the State inspector. She shall have been trap-nested under official supervision for a minimum period of 8 consecutive weeks during the breeding season, and shall have met the requirements in (*a*) or (*b*) below:

(*a*) She shall produce at the rate of at least 50 percent (28 or more eggs) for 8 consecutive weeks. All eggs produced during this 8-week period shall be set. The average hatchability of all eggs set shall be 70 percent or more. At altitudes of 3,000 to 3,499 feet, the minimum qualifying hatchability percentage shall be 65 and at altitudes of 3,500 feet or more, the minimum qualifying hatchability percentage shall be 60. A minimum of 20 good poults shall be hatched. Eighty percent of all good poults hatched and a minimum of 16 shall be alive at 22 weeks of age. Each bird shall be carefully examined not earlier than at 22 weeks of age by a State inspector or authorized agent of the official State agency. At the time of this examination, at least 60 percent of all young-tom progeny and at least 80 percent of all young-hen progeny shall be of U. S. Grade A market quality,

except for pinfeather, fattening, and dressing requirements, provided a minimum of 12 poults meet these requirements.

(*b*) She shall produce at the rate of at least 2¼ good poults per week from eggs laid during a minimum period of 8 consecutive weeks. Eighty percent of all good poults hatched and a minimum of 16 shall be alive at 22 weeks of age. Each bird shall be carefully examined not earlier than at 22 weeks of age by a State inspector or authorized agent of the official State agency. At the time of this examination at least 60 percent of all young-tom progeny and at least 80 percent of all young-hen progeny shall be of U. S. Grade A market quality, except for pinfeather, fattening, and dressing requirements, provided a minimum of 12 poults meet these requirements.

(*c*) Having met the requirements in (*a*) or (*b*) the hen may be banded by a State inspector with an official sealed and numbered leg band lettered "U. S. R. O. M.".

ARTICLE 3. PULLORUM CLASSES

The aim or goal in an official pullorum disease testing program for turkeys should be eradication rather than mere control of the disease. To that end every possible step should be taken not only to eradicate infected birds from the breeding flocks, but also to eliminate all possible or probable avenues of infection for adult breeding stock, poults, and growing turkeys. Complete segregation of turkeys from chickens on the farm and in hatcheries at all stages of development, and during all seasons of the year is urgently recommended.

SECTION 1, GENERAL PROVISIONS

Paragraph 1. Matters relating to disease shall be under the direction of the livestock sanitary authorities or officials of the State college of agriculture or similarly authorized State agency of the respective States, in cooperation with the Bureau of Animal Industry, United States Department of Agriculture. The official State agency shall assume responsibility for the accuracy of the pullorum testing work.

Par. 2. The official test for pullorum disease in turkeys shall be the standard tube agglutination test, as described in the Proceedings of the United States Live Stock Sanitary Association, November 30 to December 2, 1932, pages 487-491. The rapid serum test, as described by Runnells, Coon, Farley, and Sharp, Journal of the American Veterinary Medical Association, Vol. 70 (N.S. 23), No. 5, pages 660-662, 1927, also will be accepted as an official test for a period of another year beginning August 1, 1945, provided the cooperating official State agency using this method will agree to test 500 or more turkeys with both the standard tube and rapid serum methods, make an autopsy and a bacteriological examination of all of these turkeys reacting to one test and not to the other, and report the results to the Bureau of Animal Industry, United States Department of Agriculture.[2] With the approval of the official State agency, the rapid, whole-blood, stained-antigen method when conducted by a State inspector as described below may be used as an official test for qualify-

[2] For convenience of reference the essential features of these two tests are reprinted in the Appendix, page 24.

ing for the U. S. Pullorum-Tested and U. S. Pullorum-Controlled classes for a period of one year beginning August 1, 1945, provided the cooperating official State agency using this method will agree to test 500 or more turkeys with both the standard tube and rapid, whole-blood, stained antigen methods, make an autopsy and a bacteriological examination of all these turkeys reacting to one test and not to the other, and report the results to the Bureau of Animal Industry, United States Department of Agriculture. The comparative testing referred to above shall be done in five or more flocks in which pullorum infection is suspected.

DIRECTIONS FOR MAKING THE RAPID, WHOLE-BLOOD PLATE TEST FOR PULLORUM DISEASE IN TURKEYS

All official rapid, whole-blood tests of turkeys made under the provisions of the National Turkey Improvement Plan shall be made with an antigen to be identified as Provisional Turkey Stained Antigen and shall be obtained from the U. S. Bureau of Animal Industry upon specific and direct request made by the contact representative of the plan in the State in which the antigen is to be used.

The materials, other than antigen, to be used in the test are those recommended for use in the rapid, whole-blood plate test of chickens; namely, a porcelain or glass plate provided with a white background, a loop that delivers 0.02 to 0.025 cc of blood, a dropper that delivers 0.05 cc of antigen, and equipment for cleaning or washing the plates and loops. A thermometer and timepiece must also be provided.

The test shall be carried out in a manner similar to that used in the whole-blood test of chickens as described in Miscellaneous Publication No. 349. The same proportions of blood to antigen (1 to 2 or 3) shall be used. However, the reactions with pullorum infected turkeys are usually less pronounced and develop more slowly than reactions with positive chicken blood. It is, therefore, necessary when testing turkeys to allow a longer time for reading and to observe the smear more closely than when testing chickens. For these reasons, the smear shall be observed for at least three minutes after mixing and all birds that give a visible reaction however slight shall be considered positive reactors and must be removed.

Unless provisions are made for heating the plate, testing shall not be conducted when the air temperature is below 70°F.

More than one test may be placed upon the plate at one time, but the full 3-minute period shall be allowed for reading each test.

Par. 3. In testing for pullorum disease, blood samples shall be drawn by an authorized blood collector and the testing shall be done in a laboratory recognized and approved by the official State agency.

Par. 4. All pullorum tests of flocks in any pullorum class or candidates for any class must be reported to the official State agency, and reactors occurring in unofficial tests shall be considered on the same basis as reactors in official tests.

Par. 5. All new breeding stock (except turkeys of the same or a higher pollorum class) and stock returned to the breeder's farm from exhibits, tests, etc., must be quarantined at considerable distance from the other turkeys. Such turkeys must be kept in quarantine for at least 15 days and then officially tested and found to be negative before being added to the flock.

Par. 6. In the event that tests to qualify or requalify flocks as U. S. Pullorum-Passed or U. S. Pullorum-Clean reveal any reactors, the owner shall have the right to submit, or the official State agency the right to request the submission of, all reactors if 5 or less, or 20 percent of all reactors with a minimum of 5 and a maximum of 20 to a laboratory designated by the official State agency for autopsy and bacteriological examination. In case such bacteriological examination fails to reveal any conclusive evidence of pullorum infection, the flock shall be construed as having had no pullorum. All reactors not slaughtered for bacteriological examination shall be removed and disposed of in a manner satisfactory to the official State agency.

Par. 7. The custom-hatching of turkey eggs or eggs of other poultry from non-U. S. Pullorum-Tested flocks is permitted in U. S. Pullorum-Tested and U. S. Pullorum-Controlled hatcheries, provided the incubation and hatching of such eggs are done in a separate room under the conditions prescribed in paragraph 8 of this section, but such custom-hatching may not be done in U. S. Pullorum-Passed and U. S. Pullorum-Clean hatcheries.

Par. 8. In separating a room for the use of two or more incubators, to provide for custom-hatching, a tight partition is absolutely necessary and must be provided. Outside ventilation and an outside entry for each room are required. Any door or opening between the two rooms must be sealed, as by weatherstripping and locking, or by battening the cracks around the door in the room where eggs from non-U. S. Pullorum-Tested flocks are being incubated or hatched.

Par. 9. Hatcheries participating in the pullorum classes only shall be inspected by a State inspector at least once during the hatching season.

Par. 10. All flocks participating in the pullorum classes only shall be inspected by a State inspector at least once during the breeding season.

SECTION 2, U. S. PULLORUM-TESTED CLASS

Paragraph 1. This class that permits a certain reactor tolerance is made a part of the turkey plan as a recognition that the initial step has been taken toward an eradication program. Under existing conditions in many sections of the country tolerance classes seem necessary in the developmental stage of an official turkey-testing program. No breeder should be content with having qualified his flock for the U. S. Pullorum-Tested class only. Control measures should be practiced continuously with a view to reducing the percentage of reactors each year and qualifying for the higher classes as soon as possible.

Par. 2. **U. S. Pullorum-Tested flocks.**—These flocks shall meet the following requirements:

(*a*) All turkeys to be used as breeders shall be tested for pullorum disease when more than 4 months of age under the supervision of an official State agency, and shall contain fewer than 5 percent reactors in 1945–46, fewer than 4 percent in 1946–47, and fewer than 3 percent in 1947–48, the last test being made within 6 months immediately preceding the date of first sale of hatching eggs, poults, or breeding stock from such flocks. At the end of the 1947–48 hatching season, the U. S. Pullorum-Tested class shall be deleted from the plan.

(*b*) All indicated carriers of pullorum disease shall be removed from the premises on completion of the test and disposed of in a manner satisfactory to the official State agency.

(GREEN)

FIGURE 5.—Design used to identify U. S. Pullorum-Tested flocks, eggs, poults, and hatcheries.

(*c*) All birds remaining in the breeding flock shall be properly leg- or wing-banded.

(*d*) Individual birds introduced into U. S. Pullorum-Tested flocks shall have passed, within 6 months, a negative official test for pullorum disease.

(*e*) All other poultry on the same premises must be completely segregated from the turkeys in a manner satisfactory to the official State agency. If deemed necessary by the official State agency all other poultry shall be tested for pullorum disease by an approved method and shall have no more reactors on the final test than that percentage acceptable for turkeys. All indicated carriers of pullorum disease shall be removed from the premises upon completion of the test and disposed of in a manner satisfactory to the official State agency. Where such testing is required official classification of the turkey flock shall be withheld until the qualifying test of the other poultry has been completed and any reactors properly disposed of.

Par. 3. A flock containing 5 percent or more of reactors on the first test in 1945–46, 4 percent or more in 1946–47, and 3 percent or more in 1947–48, on being retested at intervals of not less than 21 days, and all reactors disposed of after each test until the percentage of reactors is less than that designated for the particular year, may qualify as a U. S. Pullorum-Tested flock.

Par. 4. **U. S. Pullorum-Tested hatching eggs.**—Such eggs are from U. S. Pullorum-Tested flocks.

Par. 5. **U. S. Pullorum-Tested poults.**—These are hatched from eggs produced by U. S. Pullorum-Tested, U. S. Pullorum-Controlled, U. S. Pullorum-Passed, and U. S. Pullorum-Clean flocks in a U. S. Pullorum-Tested hatchery.

Par. 6. **U. S. Pullorum-Tested hatcheries.**—These hatcheries operate under the supervision of an official State agency and hatch eggs or brood poults and hatch chicken eggs or brood chicks from only U. S. Pullorum-Tested, U. S. Pullorum-Controlled, U. S. Pullorum-Passed, or U. S. Pullorum-Clean turkey and chicken flocks, except that custom-hatching may be carried on under the conditions prescribed in article 3, section 1, paragraph 8.

SECTION 3, U. S. PULLORUM-CONTROLLED CLASS

Paragraph 1. This class like the U. S. Pullorum-Tested is a tolerance class differing from U. S. Pullorum-Tested only in the tolerance permitted. It will be the only tolerance class after the 1947–48 hatching season when the U. S. Pullorum-Tested class is to be deleted from the turkey plan. As with U. S. Pullorum-Tested, no breeder or hatchery should be content with having qualified for this class. Control and eradication measures should be practiced continuously with a view to reducing the percentage of reactors each year and qualifying for the U. S. Pullorum-Passed class and then the U. S. Pullorum-Clean class as soon as possible.

Par. 2. **U. S. Pullorum-Controlled flocks.**—These flocks shall meet the following requirements:

(*a*) All turkeys to be used as breeders shall be tested for pullorum disease when more than 4 months of age under the supervision of an official State agency, and shall contain fewer than 2 percent reactors, the last test being made within 6 months immediately preceding the date of first sale of hatching eggs, poults, or breeding stock from such flocks.

(*b*) All indicated carriers of pullorum disease shall be removed from the premises on completion of the test and disposed of in a manner satisfactory to the official State agency.

(*c*) All birds remaining in the breeding flock shall be properly leg- or wing-banded.

(*d*) Individual birds introduced into U. S. Pullorum-Controlled flocks shall have passed, within 6 months, a negative official test for pullorum disease.

(YELLOW)

FIGURE 6.—Design used to identify U. S. Pullorum-Controlled flocks, eggs, poults, and hatcheries.

(*e*) All other poultry on the same premises must be completely segregated from the turkeys in a manner satisfactory to the official State agency. If deemed necessary by the official State agency, all other poultry shall be tested for pullorum disease by an approved method and shall have no more reactors on the final test than that percentage acceptable for turkeys. All indicated carriers of pullorum disease shall be removed from the premises upon completion of the test and disposed of in a manner satisfactory to the official State agency. Where such testing is required, official classification of the turkey flock shall be withheld until the qualifying test of the other poultry has been completed and any reactors properly disposed of.

Par. 3. A flock containing 2 percent or more of reactors on the first test, on being retested at intervals of not less than 21 days, and all reactors disposed of after each test until the percentage of reactors is fewer than 2 percent, may qualify as a U. S. Pullorum-Controlled flock.

Par. 4. **U. S. Pullorum-Controlled hatching eggs.**—Such eggs are from U. S. Pullorum-Controlled flocks.

Par. 5. **U. S. Pullorum-Controlled poults.**—These are hatched from eggs produced by U. S. Pullorum-Controlled, U. S. Pullorum-Passed, or U. S. Pullorum-Clean flocks in a U. S. Pullorum-Controlled hatchery.

Par. 6. **U. S. Pullorum-Controlled hatcheries.**—These hatcheries operate under the supervision of an official State agency and hatch eggs or brood poults and hatch chicken eggs or brood chicks from only U. S. Pullorum-Controlled, U. S. Pullorum-Passed, or U. S. Pullorum-Clean turkey and chicken flocks, except that custom-hatching may be carried on under the condition prescribed in article 3, section 1, paragraph 8.

SECTION 4, U. S. PULLORUM-PASSED CLASS

Paragraph 1.—This class, which embodies the recognition of infected premises, permits no tolerance in the official recognition of the flock. It emphasizes the advisability of retesting at frequent intervals

until no reactors are found and, therefore, is a more effective step toward eradication than the tolerance classes. No breeder should be content with having qualified his flock for this class. Control measures should be practiced continuously with a view to eliminating all infection and qualifying for the U. S. Pullorum-Clean class as soon as possible.

(RED)

FIGURE 7.—Design used to identify U. S. Pullorum-Passed flocks, eggs, poults, and hatcheries.

Par. 2. **U. S. Pullorum-Passed flocks.**—These flocks shall meet the following requirements:

(*a*) All turkeys to be used as breeders shall be tested for pullorum disease when more than 4 months of age under the supervision of an official State agency, the last test being made within 6 months immediately preceding the date of first sale of hatching eggs, poults, or breeding stock from such flock. If any reactors are found on the first test, the flock may qualify for U. S. Pullorum-Passed provided the provisions of Plan I or Plan II are met:

PLAN I

1. All reacting pens shall be sold for market purposes or segregated to the satisfaction of the official State agency to fatten for market.
2. All nonreacting pens shall be retested not earlier than 3 weeks after the sale or segregation of the reacting pens and found to be without reactors.

PLAN II

1. All individual reactors shall be immediately removed from the premises and disposed of in a manner satisfactory to the official State agency.
2. All infected pens shall be retested at intervals of not less than 21 days until one negative test is obtained.
3. The entire breeding flock shall be retested 14 or more days after such negative test and found to be without reactors.

(*b*) All birds remaining in the breeding flock shall be properly leg- or wing-banded.

(*c*) Individual birds introduced into U. S. Pullorum-Passed flocks shall come from U. S. Pullorum-Passed or U. S. Pullorum-Clean flocks only, except that individual birds from other sources may be introduced provided they are quarantined for 15 days, then officially tested for pullorum disease and found to be negative.

(*d*) All other poultry on the same premises must be completely segregated from the turkeys in a manner satisfactory to the official State agency. If deemed necessary by the official State agency, all other poultry shall be tested for pullorum disease by an approved method at intervals of not less than 21 days and shall contain no reactors on the last test. All indicated carriers of pullorum disease shall be removed from the premises upon completion of the test and disposed of in a manner satisfactory to the official State agency. Where such testing is required, official classification of the turkey flocks shall be withheld until the qualifying test of the other poultry has been completed.

Par. 3. **U. S. Pullorum-Passed hatching eggs.**—Such eggs are from U. S. Pullorum-Passed flocks.

Par. 4. **U. S. Pullorum-Passed poults.**—These are hatched from eggs produced by U. S. Pullorum-Passed and U. S. Pullorum-Clean flocks in a U. S. Pullorum-Passed hatchery.

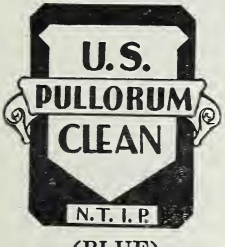
Par. 5. **U. S. Pullorum-Passed hatcheries.**—These hatcheries operate under the supervision of an official State agency and hatch eggs or brood poults from U. S. Pullorum-Passed or U. S. Pullorum-Clean flocks only. Chicken eggs may not be incubated or hatched and chicks may not be brooded in the same room with U. S. Pullorum-Passed turkey eggs or poults, unless from U. S. Pullorum-Passed or U. S. Pullorum-Clean chicken flocks and hatcheries. Chicken eggs and chicks of the U. S. Pullorum-Controlled class only may be incubated, hatched, and brooded in a U. S. Pullorum-Passed hatchery, provided all hatching and brooding operations are separated to the satisfaction of the official State agency.

SECTION 5, U. S. PULLORUM-CLEAN CLASS

Paragraph 1. **U. S. Pullorum-Clean flocks.**—These flocks shall meet the following requirements:

(*a*) All turkeys to be used as breeders shall be tested for pullorum disease when more than 4 months of age under the supervision of an official State agency and shall contain no reactors on the first or any subsequent test made within 6 months immediately preceding the date of first sale of hatching eggs, poults, or breeding stock from such flock.

(*b*) For a flock to qualify as a U. S. Pullorum-Clean flock, all other poultry on the same premises shall either qualify for a pullorum classification similar to U. S. Pullorum-Clean of the chicken plan or must be completely segregated from the turkeys in a manner satisfactory to the official State agency.



(BLUE)

FIGURE 8.—Design used to identify U. S. Pullorum-Clean flocks, eggs, poults, and hatcheries.

Par. 2. Individual turkeys introduced into U. S. Pullorum-Clean flocks shall come from U. S. Pullorum-Clean flocks only, except that individual turkeys from other sources may be introduced provided they are quarantined for 15 days, then officially tested for pullorum disease and found to be negative.

Par. 3. Flocks of this classification shall be designated as having been U. S. Pullorum-Clean for 1, 2, 3, etc., years.

Par. 4. **U. S. Pullorum-Clean hatching eggs.**—Such eggs shall come from U. S. Pullorum-Clean flocks.

Par. 5. **U. S. Pullorum-Clean poults.**—These are hatched in a U. S. Pullorum-Clean hatchery from eggs produced by U. S. Pullorum-Clean flocks.

Par. 6. **U. S. Pullorum-Clean hatcheries.**—These hatcheries operate under the supervision of an official State agency and hatch eggs or brood poults from U. S. Pullorum-Clean flocks only. Chicken eggs may not be incubated or hatched and chicks may not be brooded, unless from U. S. Pullorum-Clean chicken flocks and hatcheries.

APPENDIX

OFFICIAL TESTING FOR PULLORUM DISEASE[3]

For the benefit of active workers in laboratory and field, the essential portions of the original articles describing the two recognized methods of testing are herein reprinted verbatim.[4]

THE STANDARD TUBE AGGLUTINATION TEST

(Thirty-sixth Annual Meeting of the United States Live Stock Sanitary Association; Report of the Conference of Official Research Workers in Animal Diseases, II. Serological Diagnosis of Pullorum Disease; Jour. Amer. Vet. Med. Assoc. 82 (n. s. 35); 488–490, 1933).

Collection and delivery of blood samples.—The blood samples shall be taken by properly qualified and authorized persons only, and in containers provided by the diagnostic laboratory or other authorized agent. The containers should be stout-walled test-tubes, preferably ⅝ by 3 inches, without lip, or small well-selected medicine vials, which have been thoroughly cleaned, and dried, in a hot-air drying oven. The tubes are accompanied by selected cork stoppers which, unless new, have been washed and thoroughly boiled or scalded, and dried. All birds must be officially leg-banded with bands supplied by the control agency.

The blood is procured by making a small incision in the large median wing vein, with a small, sharp lancet, and allowing the blood to run into the tube, or by the use of a small syringe (with 20- or 21-gage needle) which is properly cleansed between bleedings with physiological saline solution. From 1½ to 2 cc. of blood should be collected. The tubes are corked and laid on their sides in order to allow the blood to solidify in a long slant. After the tubes have completely clotted, they are packed and shipped by mail (special delivery), rapid express, or by messenger, to the laboratory. All labeling must be clear and permanent, and may be done with a suitable pencil on etched portions of the tubes, or by means of fast-gum labels.

The blood samples must reach the laboratory in a fresh and unhemolyzed condition. Hemolyzed samples should be rejected. It is imperative, therefore, to cool the tubes immediately after slanting and clotting, and unless they reach the laboratory within a few hours, to pack them with ice in special containers, or by some other cooling system which will insure their preservation during transportation. In severe cold seasons, extreme precautions must be exercised to prevent freezing and consequent laking. The samples must be placed in cold (5° to 10° C.) storage immediately upon arrival at the laboratory.

Preparation of antigen.—The antigen shall consist of three representative strains of *S. pullorum* which are of known, high agglutinability, but are not sensitive to negative and to nonspecific sera. They are grown on agar having the following composition:

Water	1,000 cc.
Difco beef extract	4 gm. (0.4 percent).
Difco Bacto-peptone	10 gm. (1.0 percent).
Dry granular agar (Difco)	20 gm. (2.0 percent).
Reaction-pH 6.8 to 7.2.	

Large 1-inch test tubes, kolle flasks or Blake bottles are streaked liberally over the entire agar surface with inoculum from *48-hour slant-agar cultures* prepared from the stock cultures of the selected strains.[5] Frequent resort to the stock cultures is highly desirable, in order to maintain the purity of the antigen, and to allow *long rest intervals for the organisms.* A second intermediate culture may be necessary at times to furnish luxuriant growths for the final transfers. The antigen-growing tubes or bottles are incubated 48 hours at 37° C. and the surface growth washed off with sufficient phenolized (0.5 percent)

[3] See footnote 2, p. —.

[4] By permission of the editor of the Journal of the American Veterinary Medical Association.

[5] The stock cultures are maintained by transferring to new sloped agar at least once a month and keeping at 18° to 25° C. (average room temperature) in a dark closet or chest, following incubation for from 24 to 36 hours at 37° C. The purity of the stock cultures should be checked at definite intervals by microscopic examination of Gram-stained slides.

saline (0.85 percent) solution to make a heavy suspension or very light paste. The washings are filtered through lightly packed absorbent cotton placed in the apex of the funnel. The washings of the three separate strains are now combined in equal volume-density and stored in the refrigerator (5° to 10°) in tightly stoppered bottles.

The dilute antigen to be used in the routine testing is prepared from the stock antigen by dilution of the latter with physiological (0.85 percent) saline (C. P.)[6] solution containing 0.3 percent of phenol (Merck's blue or silver label brand), to a turbidity corresponding to 0.75–1.00 on the McFarland nephelometer scale. The hydrogen-ion concentration of the dilute antigen is corrected to pH 8.2 to 8.5 by the addition of dilute sodium hydroxide. In this narrow range thymol blue used as indicator (5 or 6 drops of the standard stock dilution added to from 5 to 6 cc. of the diluted antigen in ⅝-inch test tubes) imparts a dirty green to greenish-blue color to the tube. Cresol red (7.2 to 8.8) also may be employed. The color reaction should be checked frequently by comparison with standard buffer solutions, with the use of the comparator block, or by the potentiometer method. New dilute antigen should be prepared each day and kept cold.

The diluted antigen is employed in 2-cc. quantities in 4-inch by ½-inch test tubes or 1-cc. quantities in smaller tubes in which the final serum-antigen mixtures are made and incubated. The distribution of the antigen in the tubes may be accomplished by the use of long burettes, or special filling devices made for the purpose.

Serum dilutions, incubation, etc.—Either of two dilutions of the test sera may be employed, namely 1:25 or 1:50.[7] The 1:25 dilution, when used, shall serve as a finding dilution, and shall not be used to condemn a flock which has been placed on a * * * (pullorum-clean) list, or the immediate progeny of a * * * (pullorum-clean) flock, unless at autopsy the organism is found, or there is complete agglutination in dilutions of at least 1:50. In all official reports on the blood test the serum dilutions shall be indicated. The sera are introduced into the agglutination tubes in the desired amounts with well-cleaned serological pipettes or special serum-delivery devices which do not permit of the mixing of different sera.[8] The antigen and serum are well mixed before incubation.

Interpretation of results.—The results shall be recorded as:

N, or —, when the tube remains uniformly turbid, and there is no distinct settling of antigen.

P, or +, when there is a distinct clumping of the antigen, and the liquid between and above the agglutinated particles is clear. The reaction should be full 4+.

S, or ?, when the agglutination is only partial or incomplete (1+ to 3+). The reactions may be recorded as slightly suspicious, S or ?, or strongly suspicious, *S* or ?.

M, or missing, when samples listed on the original record sheet are missing.

H, or hemolyzed, when the blood samples were hemolyzed and unsatisfactory for the test.

B, or broken, when the sample tubes are broken on arrival, and no serum is obtained.

Some allowance must always be made for differences in the sensitiveness of different antigens and different set-ups, and therefore a certain amount of independent intelligent judgment must be exercised at all times. Also the histories of the flocks require consideration.

Preparation of the nutrient agar for antigen production.—Dissolve 20 gm. of dry Difco agar in 1,000 cc. of water, by heating for 15 to 20 minutes in a pressure sterilizer at 15 pounds' extra pressure. Add to the hot agar solution 4 gm. of Difco beef extract and 10 gm. of Difco Bacto-peptone. Test the reaction and adjust to as near pH 7.0 (6.8 to 7.2) as possible with dilute NaOH or HCl, as may be required. Heat for 10 to 15 minutes in the autoclave. Filter, if necessary, through absorbent cotton in funnel, and fill into large tubes, special flasks, or bottles.[9] Sterilize by autoclaving for 20 to 25 minutes

[6] The sodium chloride should be of tested purity.

[7] There is much difference of opinion whether 1:25 or 1:50 should be the minimum dilution, and considerable research must be done before a final agreement can be reached.

[8] Where serological pipettes (graduated in 1/100 cc.) are employed, a separate pipette should be used for each serum. Care must be exercised at all times to prevent the laking of the red corpuscles with water.

[9] If the ingredients dissolve completely and the reaction needs no adjustments, the second heating and the filtering may be omitted.

at 15 pounds' extra pressure.[10] If partly purified or refined agar (preferably granular) is employed, the hot liquid medium should filter readily through the cotton, and be ready for tubing. Clarification with egg white or whole egg is necessary only when a poor or crude grade of agar is used. Stock nutrient agar should be kept away from sunlight and dust, and in a cool place.

THE RAPID SERUM TEST

(Runnels, Coon, Sarley, and Thorp. Jour. Amer. Vet. Med. Assoc. 70 (n. s. 23) : 660–662. 1927.)

Preparation of antigen, rapid method.—One strain of *Bacterium pullorum* is grown on nutrient agar (pH 7.5) for 48 to 72 hours, washed off with a very small amount of a 12 percent solution of sodium chloride containing 0.5 percent of phenol, filtered through glass wool to remove clumps of bacteria and of media and adjusted so that its turbidity is 50 times greater than tube 0.75 of McFarland's nephelometer.

Setting up tests, rapid method.—The tests are run on glass, ruled off in inch squares. The glass forms the top of a box in which is a frosted electric-light bulb that furnishes light and heat. The interior of the box is painted black. Two serum-antigen dilutions are used for each sample. The amount of antigen in each case is 0.002 cc. This amount of the concentrated antigen is equivalent to 1 cc. of the antigen diluted to correspond to tube 0.75 of McFarland's nephelometer. Since this is the amount and turbidity of the antigen employed in the slow method, the two tests are placed on the same basis as regards antigen. The serum used is in 0.02-cc. and 0.01-cc. amounts. Therefore, the serum-antigen dilutions are equivalent to 1–50 and 1–100 in the slow method. The serum and antigen are placed a short distance apart in the squares and are mixed thoroughly with a toothpick. With positive sera agglutination usually takes place immediately. Occasionally a serum-antigen mixture is found that requires nearly 5 minutes for complete flocculation to occur. When this kind occurs the reaction can be hastened by agitation with a toothpick.

[10] When Blake bottles or Kolle flasks are used for growing the antigen, an additional heating for 5 minutes is desirable.

Health is the foundation of successful husbandry, since upon it depends successful production and reproduction. Constitutional vigor and sanitation provide the best insurance against ill health. Every turkey grower and every hatcheryman, therefore, is under obligation to maintain the health of his market and breeding stock, and to keep his premises in the best possible state of sanitation.

Turkeys should be maintained in pens or on ranges completely segregated from other poultry as an aid in the control of blackhead (enterohepatitis), pullorum disease, and other diseases transmissible to turkeys. Turkey eggs should be incubated and hatched in separate incubators (preferably in separate rooms) from chicken eggs, and poults should be brooded in separate rooms from chicks to guard against the spread of pullorum and paratyphoid infection.

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